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मानक

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IS 13201 (1991): Mine haulage tracks - Rails and fish plates - General requirements [MED 8: Mining Techniques and Equipment]



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भारतीय मानक

खानों के ढुलाई मार्ग — पटरियाँ एवं फिश प्लेट
सामान्य अपेक्षाएँ

Indian Standard

MINE HAULAGE TRACKS — RAILS AND FISH
PLATES — GENERAL REQUIREMENTS

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

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Price Group 2

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Mine Transportation Sectional Committee had been approved by the Heavy Mechanical Engineering Division Council.

Mine haulages are generally used in collieries, mines and quarries for transport of material. Rails and fish plates are important components of mine haulage tracks.

In the formulation of this standard, assistance has been derived from the following publications:

- BS 11 : 1985 'Specification for flat bottom railway rails', issued by British Standards Institution, London.
- BS 536 : 1934 'Specification for light flat bottom railway rails', issued by British Standards Institution, London.
- NCB 143 : 1969 'Light flat bottom rails, fish plates and fish bolts', issued by National Coal Board, London.

Also due consideration has been given to the existing norms, manufacturing process, general use and practices being followed at present, while specifying the requirements in this standard.

This standard at present, covers the requirements for rails and fish plates for rails of designation up to ISLR 15 according to IS 3964 : 1980 'Light rails (*first revision*)'. IS 3964 : 1980 lays down requirements for rails up to designation ISLR 25. Indian Mining Industry is using rails of up to 45 kg/m mass for mine haulage tracks. Requirements for rails and fish plates for rails of designation above ISLR 15 will be included in the standard at a later date.

Notwithstanding the requirements of statutory bodies or specified otherwise for rails and fish plates for mine haulage tracks, the requirements given in this standard are expected to provide a uniform practice of standardization of these products.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

MINE HAULAGE TRACKS — RAILS AND FISH PLATES — GENERAL REQUIREMENTS

1 SCOPE

This Indian Standard covers the general requirements of light flat bottom rails and fish plates for underground track and associated surface tracks in mines.

2 REFERENCES

The Indian Standard IS 3964 : 1980 'Light rails (first revision)' is a necessary adjunct to this standard.

3 RAILS

3.1 Designation, material specification, dimensions and tolerances shall be in accordance with IS 3964 : 1980, if otherwise not specified in this standard.

3.2 End Preparation

3.2.1 Squareness

The ends of rails shall be sawn true and square. Squareness of the cut end shall be maintained within ± 0.1 mm.

3.2.2 Verticality

The verticality of rails shall be maintained within ± 0.3 mm.

3.2.3 Straightness

Straightness of the rails shall be maintained as follows:

- a) Rails up to 6 metre long shall be within ± 1 mm per metre but shall not exceed ± 4 mm in total, and

- b) Rails above 6 metre long but within 10 metres shall be maintained within ± 6 mm.

3.2.4 Camber

Positive camber of the rail shall be maintained within 2 mm. Negative camber shall not be allowed.

3.2.5 Profile

The deviation of the profile dimension shall not exceed ± 0.5 mm anywhere.

3.2.6 Sweep

Sweep shall be maintained within 2 mm for each 6 metre length but shall not exceed 6 mm in total.

3.2.7 Twist

Twist shall be maintained within ± 0.2 mm.

3.3 Holes

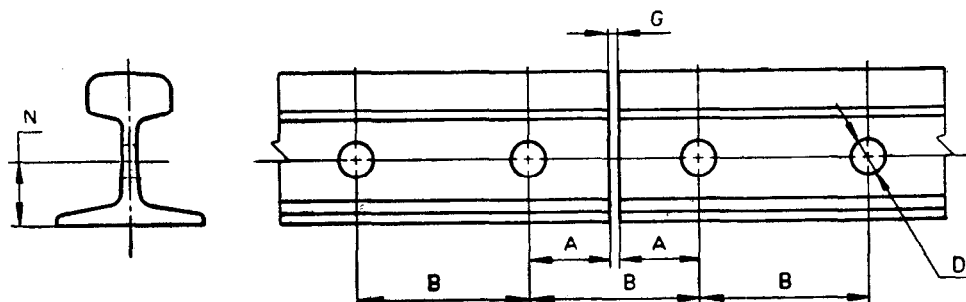
3.3.1 Holes in Rail

Holes for fish bolts in the rails shall be made for fastening fish plates through the web at each end.

3.3.2 Method of Making Holes

3.3.2.1 Holes shall be either drilled or be punched perpendicular to the web of the rail at one stroke of the machine. The holes shall be clean and free from burrs and cracks.

3.3.2.2 Dimension of the rail holes shall be as specified in Fig. 1.



All dimensions in millimetres.

Designation of Rails	Nominal Mass of Rail kg/m	G ± 1.6	A ± 1.6	B ± 1.6	D	N
ISLR 10	10	6	42	90	14.5	25
ISLR 12	12	6	42	90	18.5	28
ISLR 15	14.9	6	42	90	18.5	33

FIG. 1 DIMENSIONS OF RAIL HOLES

3.3.3 Nail Holes

3.3.3.1 When rails are required to be provided with nail holes, this shall be stated in the purchase order.

3.3.3.2 The nail holes shall be either drilled or punched parallel with the vertical axis of the rail. The holes shall be clean and be free from burrs and cracks.

3.3.3.3 Dimensions of the nail holes shall be as specified in Fig. 2, where the rail length is a multiple of 900 mm. For other rails lengths the pitching of the holes shall be as specified by the purchaser.

3.3.3.4 Variation in rail length, within the length tolerance specified, shall be accommodated at the end pitches.

4 FISH PLATES

4.1 Fish plates shall be used to fasten two rails during track laying. These specially designed fish plates also prevent the bolts from turning when the nuts are tightened.

4.2 Material

The fish plates shall be made of carbon steel with a tensile strength of 400 to 500 N/mm² and a minimum elongation of 20 percent.

4.3 Dimensions

Fish plates are normally in Sections *A*, *B* and *C* (not formal designations) and the dimension and tolerances of these fish plates shall be in accordance with Fig. 3 to Fig. 5 respectively.

4.4 Fixing of Fish Plates

Fish plates shall engage the fishing surfaces of both the head and flange of the rail with a working gap between inner face of the fish plate and web of rail when bolted up.

4.5 Cutting

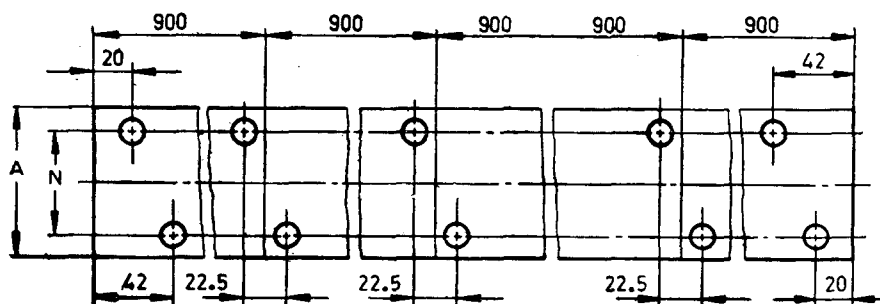
The ends of the fish plates shall be sawn or sheared and shall be square. Cut ends shall be clean and free from burrs.

4.6 Straightness

The fish plates shall be straight and of uniform section.

4.7 Holes

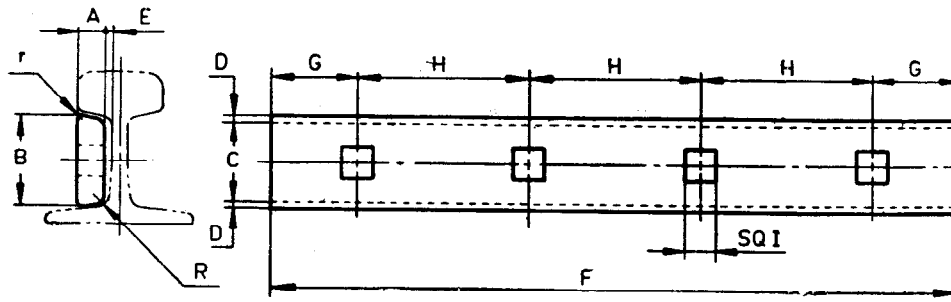
The holes in fish plates shall be made by drilling or punching at one stroke of the machine. Holes shall be clean and without burrs and cracks.



All dimensions in millimetres.

Designation of Rails	Nominal Mass of Rail kg/m	Width of Flange <i>A</i>	Hole Centres <i>N</i>	Hole Dia
ISLR 10	10	63·50	41·27	12·5
ISLR 12	12	60·00	47·62	12·5
ISLR 15	14·9	76·20	53·97	12·5

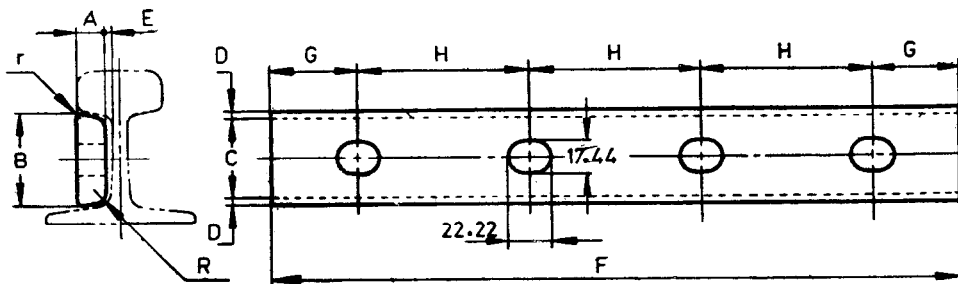
FIG. 2 DIMENSIONS OF NAIL HOLES



All dimensions in millimetres.

Designation of Rails	Nominal Mass of Rail kg/m	A ± 0.4	B $+1.10$ -0	C $+1.10$ -0	D	E	F $+6$ -0	G $+2$ -0	H ± 1.1	I $+2$ -0	R	r
ISLR 10	10	11.3	43	37.5	2.8	1.8	360	45	90	13	4.76	1.59
ISLR 12	12	12.8	46.2	39.72	3.2	2.2	360	45	90	17	6.35	1.59
ISLR 15	14.5	12.8	48.8	42.2	3.2	4.4	360	45	90	17	6.35	1.59

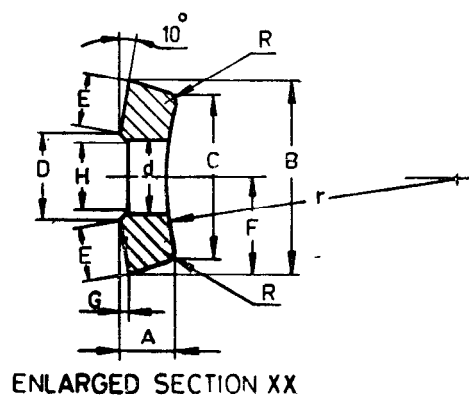
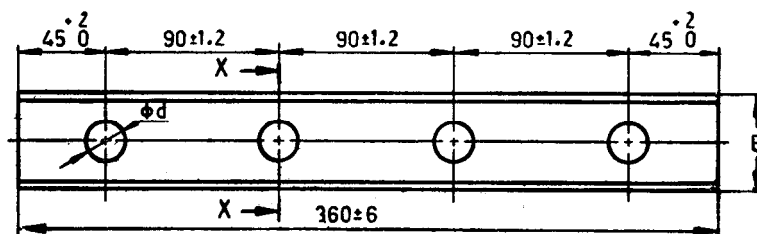
FIG. 3 'A' SECTION FISH PLATE



All dimensions in millimetres.

Designation of Rail	Nominal Mass of Rail kg/m	A ± 0.4	B $+1.10$ -0	C $+1.10$ -0	D	E	F $+6$ -0	G $+2$ -0	H ± 1.2	R	r
ISLR 10	10	11.3	43	37.5	2.8	1.8	360	45	90	4.76	1.59
ISLR 12	12	12.8	46.2	39.72	3.2	2.2	360	45	90	6.35	1.59
ISLR 15	14.5	12.8	48.8	42.2	3.2	4.4	360	45	90	6.35	1.59

FIG. 4 'B' SECTION FISH PLATE



All dimensions in millimetres.

Designation of Rails	Nominal Mass of Rail kg/m	A ±0.4	B +1.10 -0	C +1.10 -0	D	d	E	F	G	H	R	r
ISLR 10	10	12	43	37.5	18	15	12	21.5	1.5	16	4.5	65
ISLR 12	12	14	46.2	39.72	20	19	13	23.1	1.8	18	5	70
ISLR 15	14.5	14	48.8	42	22	19	14	24.2	2	18	5	75

FIG. 5 'C' SECTION FISH PLATE

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